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Missouri National Recreational River 2012 Resource Brief

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MISSOURI NATIONAL RECREATIONAL RIVER
2012 RESOURCE BRIEF

Above: A long-term monitoring plot at Missouri NRR.

Right: Red cedars (*Juniperus virginiana)* are abundant at upper Bow Creek.

PLANT COMMUNITY MONITORING

Overview: The Missouri National Recreational River (MNRR) comprises two free-flowing segments of the river along the Nebraska-South Dakota border that have significant natural, recreational, and cultural qualities that warrant preservation. The park owns only a small portion of the land within its 69,123 acre boundary. The Bow Creek Recreational Area encompasses approximately 250 acres with areas of upland forest, native prairie, restored prairie, sand bar, cottonwood forest, and wetlands. The Mulberry Bend property contains approximately 30 acres of mesic bur oak forest and grassland. While small in area, MNRR actively manages Bow Creek and Mulberry Bend with a mission to preserve ecological integrity. The distribution and abundance of diverse native plant communities are currently considered to be a moderate concern to natural resource management.

Highlights: Red cedar (*Juniperus virginiana*) is a native tree that has been expanding into areas of the park over the past decades. The landscape has become dominated in areas by closed canopy red cedar forests and there has been a loss of native prairie. In 2008, the park undertook a project to remove cedars from Upper Bow Creek. Preliminary data suggest that the removal has been effective in restoring native plant diversity in some areas.

Condition Indicator	*Current Status/Trend*	*Rationale for Resource Condition*
Climate Monitoring		
Drought		Although cycles of dry and wet periods are common in the Great Plains, severe drought in 2012 is a cause for significant concern.
Water Quality Monitoring		
Streamflow and water quality		Streamflow in the Niobrara River was close to average in 2012, although extreme drought in the region led to lowflows in late summer.

Note: Table based on State of the Parks Reports - see annual report for more details. Green indicates "good condition" and red indicates "significant concern".

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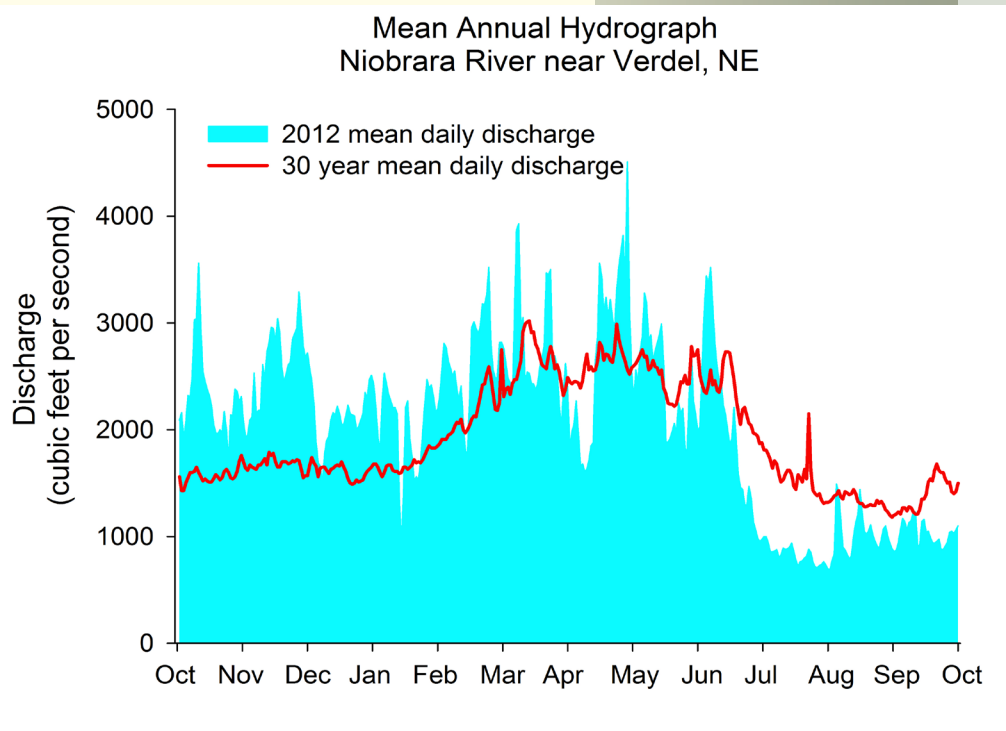
WATER QUALITY MONITORING

Overview: Water quality monitoring is important for tracking park ecological health, measuring compliance with federal and state laws and standards, and detecting threats to human health. The Northern Great Plains Network is in the early stages of developing a water quality monitoring protocol for the Missouri NRR. The United States Geologic Service (USGS) has maintained a stream gage in the 39-mile district of the park along the Niobrara River near Verdel since 1928.



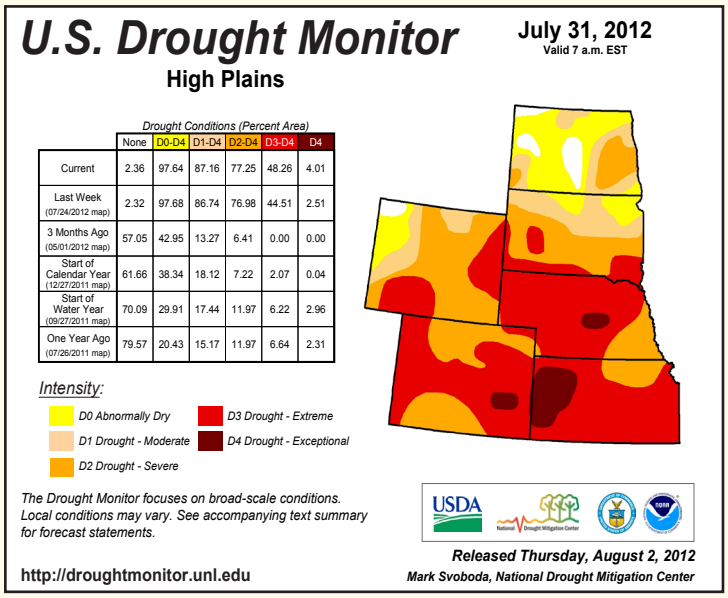
Highlights: Streamflow in 2012 was above or close to the 30-year average for the Niobrara River in the beginning of the water year. After July, flows declined to below average, most likely due to the extreme drought in the region. NGPN will begin continuous monitoring of water quality during the ice-free season at Bow Creek in 2014 (59-mile district) and in the Niobrara River at Verdel, NE in 2015(39-mile district).

Top: Mean annual streamflow of the Niobrara River in the 39-mile district of Missouri NRR for the 2012 water year (Oct 2011-Sept 2012). Data courtesy the USGS.

Bottom: Extreme drought conditions at Missouri NRR during summer 2012.

WEATHER AND CLIMATE MONITORING

Overview: Weather is a fundamental driver of ecosystems in the northern Great Plains. Trends in temperature and precipitation may help explain trends seen in other resources such as plant communities.



Highlights: Missouri NRR experienced extreme drought conditions during the summer of 2012. The drought worsened throughout the summer and fall. By the end of 2012, the area was experiencing an exceptional drought.

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